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BENTHOCTOPUS OREGONAE, A NEW SPECIES OF OCTOPOD (MOLLUSCA; CEPHALOPODA) FROM THE SOUTHERN CARIBBEAN WITH A REDESCRIPTION OF *BENTHOCTOPUS JANUARII* (HOYLE, 1885)

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ABSTRACT

Benthoctopus januarii (Hoyle, 1885) is redescribed from 11 new specimens from the Gulf of Mexico and the Caribbean Sea. A new sympatric species, *Benthoctopus oregonae*, is described based on seven specimens from the southern Caribbean. The new species differs from *B. januarii* in possessing a smaller hectocotylus and penis, deeper web, more robust brachial crown, reverse counter shading, simple intestine, and a crop bearing an anterior diverticulum. Its relation to other known species of the genus is discussed.

While examining several lots of unaccessioned cephalopods from the collections of the Rosenstiel School of Marine and Atmospheric Science, University of Miami, seven specimens of a mid- to upper-slope benthic octopod were found. Gross anatomical features suggested that the specimens were attributable to the genus *Benthoctopus*. However, the specimens did not conform to the description of any previously reported species. The material was subsequently determined to represent a new species.

An examination of the literature pertaining to this interesting but confused genus indicated that one species, *Benthoctopus januarii* (Hoyle, 1885), was reported from the Caribbean. In an attempt to compare the new material with *B. januarii*, the lack of an adequate description of the latter became apparent. The redescription given here is based on eleven specimens of *B. januarii* from the Gulf of Mexico and Caribbean Sea.

All measurements and indices are defined in Voss (1963) and Pickford and McConnaughey (1949). The radula formula is defined in Robson (1925). Abbreviations are as follows: USNM, United States National Museum; UMML, University of Miami Marine Laboratory; ORE, M/V OREGON; ORE II, M/V OREGON II; SIL BAY, M/V SILVER BAY.

HISTORICAL RESUMÉ OF *BENTHOCTOPUS JANUARII* (HOYLE, 1885)

In a brief description, Hoyle (1885a) established *Octopus januarii* based on two male specimens taken by H.M.S. CHALLENGER, one from the western Atlantic off Barra Grande, Brazil, the other from off the coast of Japan. A subsequent description by Hoyle (1885b) provided no additional information. Hoyle later (1886) expanded his description of *Octopus januarii* with measurements and illustrations. The measurements of only one specimen were given. This animal, with an overall length of 285 mm, was indicated in footnote as being the Atlantic specimen and was stated by Hoyle to be in better condition than the other "which had also a length of about 290 mm." The legend accompanying the figured specimen indicates that it was the "larger specimen," presumably the Pacific form. Hoyle (1886) remarked "it is not a little remarkable that the same species of octopus should be found in such diverse localities as is here the case." No holotype was chosen.

Probably due to the vagueness of the description and the wide geographical range attributed to *Octopus januarii* by Hoyle, later authors assigned to this species various specimens of deep water octopods from a wide range of geographical areas. Goodrich (1896) attributed to *O. januarii* three specimens from the Bay of Bengal and the Andaman Sea. Hoyle (1904) further confused the situation by including under *Polypus januarii* a badly mutilated specimen from the Cocos Islands. Massy (1916) included four specimens from the Andaman Sea and the Gulf of Oman under *P. januarii,* as did Sasaki (1920, 1929) with four specimens from the Aleutian Islands and Japan.

Robson (1932) reviewed the species and placed it in the genus *Benthoctopus* based on its deepwater habitat and lack of an ink sac. Robson chose to divide the material included under *B. januarii* into three species: *B. profundorum* from Japan, the Aleutians, and the Andaman Sea, *Teretoctopus alcocki* to include the specimen from the Bay of Bengal, and *B. januarii* for Hoyle's syntype from off Brazil, now the lectotype.

Robson (1932) illustrated the hectocotylus, radula, and reproductive organs of *B. januarii* and redescribed the species from the lectotype. The species was characterized as follows: "Body globular, eyes large and closely set. Arms long (ALI = 87%) and finely tapering, in the order 1.2.4.3. or 1.2.3 = 4. Suckers narrow, not enlarged. Web shallow (WDI = 22–23%), web formula ACBDE. Mantle aperture narrow, funnel cylindrical, becoming conical at tip, free for ¼ of its length. Mantle without sculpture. Radula with rachidian tooth of B. 6–7 type; first lateral with submedial cusp; second lateral with terminal cusp; third lateral straightened, thick, expanded basally; marginal degenerate, quadrangular and oblong. Hectocotylized arm short, LLI = 7%, CLI > 33%. Needham's sac six times the length of the penis. Penis with long diverticle."

No additional specimens were attributed to this species until Voss (1956, 1968) reported on four specimens from the Gulf of Mexico and the Caribbean off Colombia.

Benthoctopus januarii (Hoyle, 1885)
Figures 1A–J; 3A,D–G

Octopus januarii Hoyle, 1885a: 229 (*partim*) (*ex* Steenstrup, MS); 1885b: 105 (*partim*); 1886: 97, pl. VII, figs. 1–4 (*partim*).—(not) *O. januarii,* Goodrich, 1896: 19.—Robson, 1926: 1329 (*partim*).

(not) *Octopus levis* var., Joubin, 1900: 35, pl. III, fig. 7.

(not) *Polypus januarii,* Hoyle, 1904: 18, pl. V, fig. 2.—Berry, 1912: 392.—Massy, 1916: 199.—Sasaki, 1920: 172; 1929: 61, pl. IV, fig. 3, pl. XI, fig. 4, text figs. 23, 24.

Benthoctopus januarii, Robson, 1929: 41 (*partim*); 1931: 235, text figs. 33a, 40, 41.—Voss, 1968: 656.

Benthoctopus januari, Voss, 1956: 167, fig. 17d.

Material Examined.—1♂, mantle length 63 mm, ORE Sta. 3670, 29°00.5'N, 88°22'W, 730 m, 40' flat trawl, 30 July 1962, UMML 31.442.—1♀, mantle length 63 mm, ORE II, Cr. 7343, Sta. 121, 12°55'N, 70°21'W, 732 m, 24 Feb. 1973, UMML 31.1752.—1♀, mantle length 57 mm, ORE Sta. 4436, 11°14'N, 68°12'W, 420 m, 40' flat trawl, 8 Oct. 1963, UMML 31.1751.—2♀♀, mantle lengths 55–29 mm, ORE Sta. 3575, 12°35'N, 82°19'W, 460 m, 40' shrimp trawl, 23 May 1962, UMML 31.1750.—2♂♂, mantle lengths 52–46 mm, ORE Sta. 3565, 14°10'N, 81°55'W, 440–460 m, 40' shrimp trawl, 21 May 1962, UMML 31.923.—1♂, mantle length 40 mm, ORE Sta. 1886, 16°55'N, 81°12'W, 500 m, 40' flat trawl, 23 Aug. 1957, UMML 31.1749.—1♂, mantle length 40 mm, ORE Sta. 3739, 29°12'N, 87°58'W, 495 m, 100' flat trawl, 26 Aug. 1962, UMML 31.443.—1♂, mantle length 38 mm, SIL BAY Sta. 1203, 29°05'N, 88°22'W, 460 m, 40' flat trawl, 21 May 1962, UMML 31.463.—1♀, mantle length 28 mm, ORE Sta. 445, 19°48'N, 91°20'W, 25 m, 100' flat trawl, 26 Aug. 1951, UMML 31.89.

Description.—Small to medium size animals with firm consistency. The mantle is saccular and elongated (MWI = 39.3–*56.4*–84.2). The head is narrow (HWI =

Table 1. Measurements (in mm) of six males of *Benthoctopus januarii*

Character												
UMML number	31.442		31.923		31.923		31.463		31.443		31.1749	
Mantle length	63		52		46		38		40		40	
Mantle width	32		32		20		32		30		19	
Head width	26		22		19		23		19		15	
Arm lengths	L	R	L	R	L	R	L	R	L	R	L	R
I	208	333	68+	252	194	205	204	187	233	227	198	173
II	272	265	115+	248	90+	32+	158+	210	217	180+	185	168
III	204	135	207	111	154	101	120+	104	161	97	159	108
IV	226	192	55+	213	116	72	133	129	146	145	138	137
Arm width	7.1		7.1		5.0		6.0		5.6		5.8	
Hect. arm length	135		111		101		104		97		108	
Ligula length	11.5		9.9		8.1		9.1		8.0		6.3	
Calamus length	2.3		2.1		1.2		2.0		2.0		1.4	
Sucker diameter	3.0		3.3		2.7		2.2		2.5		2.2	
No. gill lamellae	8		7		7		7		7/8		7	
Total length	404		312		257		253		281		243	
Web depth												
A	34		27		22		24		30		20	
B	28		35		21		25		26		17	
C	25		22		20		28		29		24	
D	21		23		20		26		25		22	
E	13		23		12		26		24		22	
Spermatophore length	87.7		81.9/78.3		—		—		—		53.1	
Spermatophore width	1.8		1.7/1.7		—		—		—		1.1	
Sperm res. length	24.7		24.9/24.8		—		—		—		16.2	

37.5–*50.8*–60.5) and is separated from both the mantle and the brachial crown area by narrow, deep constrictions. The brachial crown is small. The eyes are moderately large, slightly projecting and closely set. The funnel is stout, cylindrical, tapering towards the tip, the distal ¼ free. The mantle aperture is fairly wide, extending from the posterior edges of the eyes. The funnel organ is poorly preserved in all material. It appears to be of the V V type.

The arms are long (ALI = 76.8–*81.8*–86.4) (MAI = 14.6–*19.2*–26.4), moderately narrow (AWI = 10.7–*13.7*–17.5), and attenuated towards the tips, becoming filiform. The arm order is variable, but most commonly is I = II.III = IV. The arms are firm and muscular. The biserial suckers are small (SnI = 3.6–*5.8*–7.5) and erect. There are approximately 80 pairs of suckers on each arm. No enlarged suckers are present.

The web formula is variable; E is generally the shallowest sector, A or B the deepest. The web is shallow (WDI = 10.2–*12.6*–15.3), however, it extends down the ventral side of the arms almost to the tips. On the dorsal side it extends only for about the proximal $^1/_5$. The right third arm is modified as a hectocotylus. It is shorter than its fellow arm (HAI = 40.5–*46.6*–54.5) and possesses a conspicuous spermatophoral groove that runs the length of the arm. The ligula is moderately large (LLI = 5.8–*8.0*–8.8), pointed, with a deep central groove. Transverse rugae are present but poorly preserved in most specimens. The calamus is small (CLI = 14.8–*20.9*–25.0), well formed, and sharply pointed.

The gills are small with 7 or 8 primary lamellae on the outer demibranch.

Table 2. Measurements (in mm) of five females of *Benthoctopus januarii*

Character										
UMML number	31.89		31.1750		31.1750		31.1751		31.1752	
Mantle length	28		55		29		57		63	
Mantle width	11		32		15		42		45	
Head width	13		20		12		30		35	
Arm lengths	L	R	L	R	L	R	L	R	L	R
I	106	88	291+	399	187	199	359	320+	49+	254+
II	95	88	370	260	120	186	353	363	82+	213+
III	63	48	242	248	119	126	277	254	217	175+
IV	61	56	204	189	128	149	230	224	235	270
Arm width	3.0		7.0		4.0		9.2		11.0	
Sucker diameter	1.0		3.1		1.8		3.9		4.7	
No. gill lamellae	7		8		7		7		8	
Total length	138		462		232		428		351	
Web depth										
A	13		25		15		44		28	
B	16		36		11		42		26	
C	13		23		22		46		27	
D	12		27		20		41		22	
E	9		26		7		34		31	

The digestive system was dissected out. The buccal mass is not unusual in size. The beaks are shown in Figures 1 and 2. 1F,G; neither mandible is distinctive. The radula is small with lightly pigmented teeth. Both the rachidian and the first lateral teeth display considerable individual variation. Of three radulae examined, one is of the A_4 type, one of the B_4 type, and the third is somewhat intermediate. The first laterals bear a subterminal ectocone that is sharply pointed in two specimens and bluntly rounded in the third. The remainder of the radular teeth are less variable. The second laterals have a short broad endocone on a broad curved base; the third laterals are saber-shaped and strongly pointed; the marginals are reduced, flat, rectangular plates.

The crop appears as an enlargement near the mid-portion of the esophagus and lacks a true diverticulum. When full of food, the crop is greatly distended and the walls are somewhat transparent. The anterior salivary glands are moderately large and lie on the buccal mass near the esophagus. The large posterior salivary glands are triangular and lie appressed to the crop. The esophagus leads directly into a thick-walled muscular stomach. The stomach and spiral caecum are approximately equal in size. The digestive gland, from which a pair of ducts enter the caecum, is sub-rectangular and superficially divided by a median groove. The intestine is tripartite; the proximal and distal portions with thickened walls, the mid-portion with a thinner wall. There are no anal flaps.

There is no ink sac.

The penis is large (PLI = 27.1–*33.0*–47.4), slightly conical, with a blunt diverticulum. Needham's sac is approximately four times the length of the penial apparatus. The accessory gland is large and well developed with a small appendix proximal to the insertion of the seminal duct. The seminal gland is long and narrow proximally but widens abruptly and remains so for the remainder of its length. A bulbous appendix is present distal to the insertion of the sperm duct.

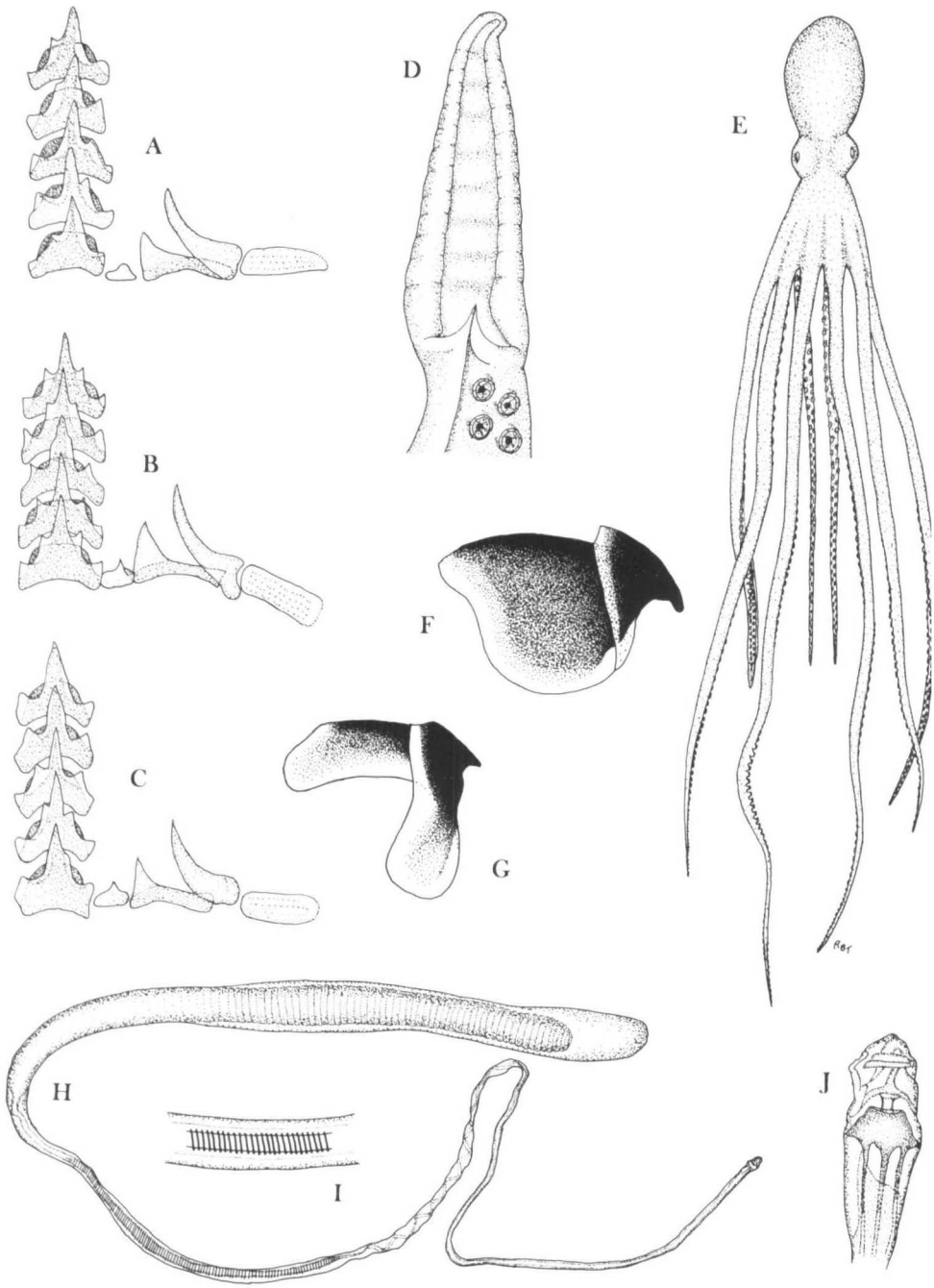

Figure 1. *Benthoctopus januarii*: A, radula from UMML 31.1749; B, radula from UMML 31.463; C, radula from UMML 31.1751; D, hectocotylus; E, dorsal view; F, upper mandible; G, lower mandible; H, whole spermatophore; I, portion of ejaculatory apparatus of same; J, oral end of same from UMML 31.442.

Spermatophores were removed from Needham's sac of several males and are illustrated in Figure 1. The spermatophores exhibit no unusual characters. The sperm reservoir is a tightly coiled cylinder. The cement body, if present, is not distinguishable as a separate structure. The ejaculatory apparatus consists of a long, thin, threaded rod which narrows anteriorly, becoming a loosely, somewhat irregularly coiled tube. Straightening anteriorly, the tube continues without coiling to the cap. The greatest diameter of the spermatophore is in the sperm reservoir area (SWI = 2.1–*2.2*–2.2). The spermatophore is not unusually large (SPLI = 131.3–*143.1*–157.5).

Females possess a short, narrow, proximal oviduct that widens at the point of attachment to the oviducal gland. The latter is large and deeply pigmented. The distal oviduct is three times as long and twice as wide as the proximal duct. In one gravid female (UMML 31.1752), the distal ⅔ of the distal oviduct is elongated and greatly distended. The eggs are elongate oval, approximately 14 mm long by 3.5 mm wide with a short, narrow stalk. The eggs are longitudinally striated.

The mantle is smooth and devoid of sculpture. In preservation, the dorsal surface is pinkish-gray to gray in color; the ventral surface is slightly paler. Countershading was not observed.

Type.—British Museum.

Type Locality.—Off Barra Grande, Brazil, 9°5'S, 34°50'W, 350 meters, over red mud.

Discussion.—Robson was handicapped in his ability to treat this species adequately due to the single specimen at his disposal. Nevertheless, his description, while brief, agrees well with the present material except for two minor discrepancies. The web depth index given by Robson is greater than that of any specimen herein described and the radula as reported by Robson had a seriation of 6–7 while all the present material examined has a seriation of 4 despite the variation in cusp symmetry. The differences in web depth are not great and can be the result of different fixatives, length of time in preservation, and preservation state of the animal. Radular variation in deep-sea octopods has been recorded by Voss (1977). In light of the number of similarities, the present material is attributed to *B. januarii*.

Benthoctopus oregonae new species
Figures 2A–F; 3B,C,H

Material Examined.—Holotype: Male, mantle length 58 mm (fixed in formalin?, preserved in alcohol), ORE Sta. 4449, 10°56'N, 67°38'W, 1080 m, 40' flat trawl, 10 Oct. 1963, USNM 730015.

Paratypes.—1♀, mantle length 57 mm, ORE II, Cr. 7343, Sta. 126, 12°48'N, 70°07'W, 640 m, 25 Feb. 1973, USNM 730017.—1♂, mantle length 51 mm, ORE II, Cr. 7343, Sta. 121, 12°55'N, 70°21'W, 723 m, 24 Feb. 1973, USNM 730018.—1♂, mantle length 45 mm, ORE II, Cr. 7343, Sta. 125, 12°53'N, 70°14'W, 640 m, 25 Feb. 1973, USNM 730016.—2♂♂, mantle lengths 44–42 mm, ORE II, Cr. 7343, Sta. 125, 12°53'N, 70°14'W, 640 m, 25 Feb. 1973, UMML 31.1753.—1♀, mantle length 35 mm, ORE II, Cr. 7343, Sta. 126, 12°48'N, 70°07'W, 640 m, 25 Feb. 1973, UMML 31.1754.

Description.—Animals small to medium in size, body semi-gelatinous. The mantle wall is slightly thickened. Mantle ovoid, moderately broad (MWI = 61.9–*72.0*–88.2). The mantle is poorly demarcated from the head, which is fairly broad (HWI = 52.6–*71.6*–86.3). The head region is clearly separated from the brachial crown. The brachial crown is robust. The eyes are large, deeply set in most specimens, but slightly protruding in some. The mantle aperture is wide, extending from a point just behind the posterior edges of the eyes.

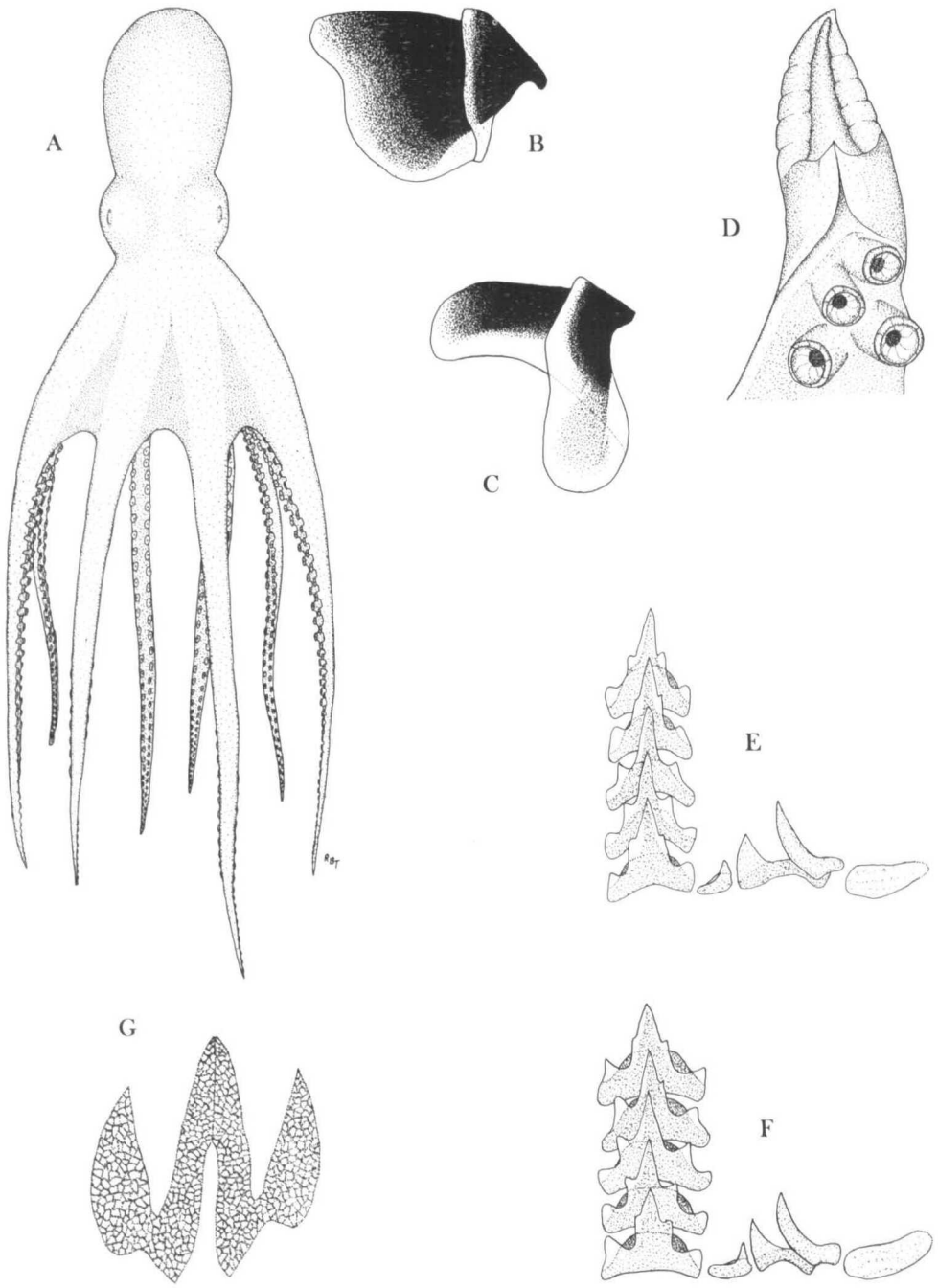

Figure 2. *Benthoctopus oregonae* new species: A, dorsal view of holotype; B, upper mandible; C, lower mandible of UMML 31.1753, ♂, mantle length 44 mm; D, hectocotylus from holotype; E, radula from UMML 31.1753, ♂, mantle length 42 mm; F, radula from UMML 31.1753, ♂, mantle length 44 mm; G, funnel organ from holotype.

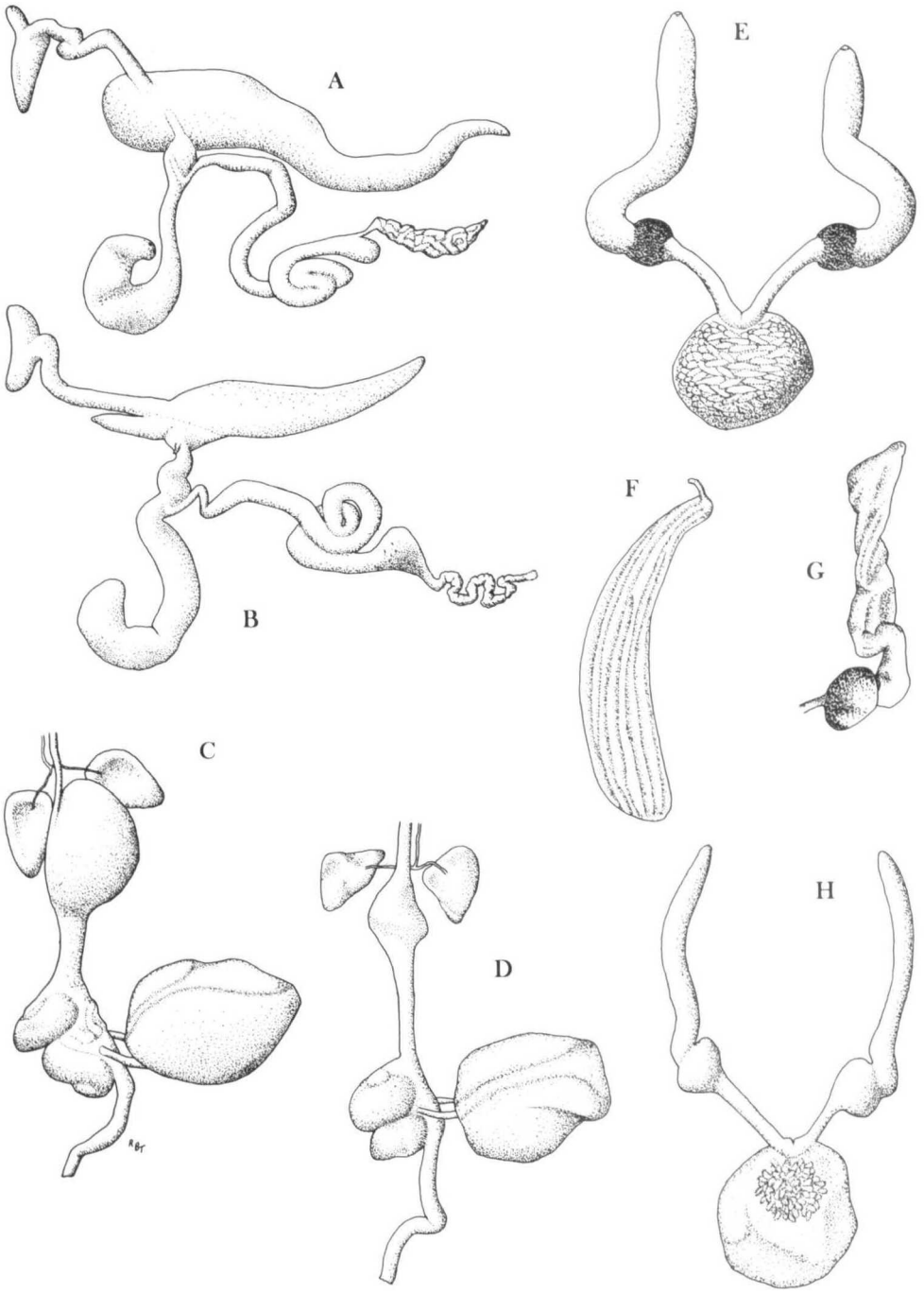

Figure 3. B,C,H, *Benthoctopus oregonae* new species: B, male reproductive organs from USNM 730018; C, digestive tract from USNM 730016; H, female reproductive organs from USNM 730017.—A,D–G, *Benthoctopus januarii*: A, male reproductive organs from UMML 31.442; D, digestive tract from UMML 31.1750, ♀, mantle length 55 mm; E, female reproductive organs from UMML 31.1751; F, egg; G, distal oviduct and nidamental gland from UMML 31.1752.

Table 3. Measurements (in mm) of five males and two females of *Benthoctopus oregonae* new species

Character	Holotype		Paratypes											
Number	USNM 730015		USNM 730016		USNM 730017		USNM 730018		UMML 31.1753		UMML 31.1753		UMML 31.1754	
Sex	♂		♂		♀		♂		♂		♂		♀	
Mantle length	58		45		57		51		42		44		35	
Mantle width	40		29		48		45		26		31		23	
Head width	36		33		40		44		24		33		27	
Arm lengths	L	R	L	R	L	R	L	R	L	R	L	R	L	R
I	231	182+	109	108	227	213	66+	173	117	120	143	75+	96	94
II	210	226	116	105	202	234	171	175	100	81+	78+	119	104	92
III	189	170	83+	84	174	218	158	134	89	92	123	95	96	88
IV	176	174	96	83	190	206	153	165	95	98	110	105	87	85
Arm width	8.5		5.3		10.0		11.0		4.5		6.0		4.9	
Hecto. arm length	170		84		—		134		92		95		—	
Ligula length	5.2		2.5		—		7.1		2.8		3.1		—	
Calamus length	2.6		1.1		—		3.7		1.2		1.4		—	
Sucker diameter	4.8		2.8		4.7		4.7		2.0		2.9		1.6	
No. gill lamellae	7		7/8		7/8		8		8/9		8		7/8	
Total length	297		166		299		244		167		194		142	
Web depth														
A	44		29		38		41		28		28		24	
B	49		29		44		43		26		30		23	
C	46		27		46		47		24		31		19	
D	43		26		46		43		25		31		21	
E	38		23		46		37		25		31		17	

Table 4. Comparison of indices between *B. januarii* and *B. oregonae* new species

	B. januarii	*B. oregonae* n. sp.
MWI-	39.9– *56.4*– 84.2	61.9–*72.0*–88.2
HWI-	37.5– *50.8*– 60.5	52.6–*71.6*–86.3
MAI-	14.6– *19.2*– 26.4	24.4–*31.1*–38.8
ALI-	76.8– *81.8*– 86.4	69.9–*73.8*–78.3
AWI-	10.7– *13.7*– 17.5	10.7–*14.8*–21.6
WDI-	10.2– *12.6*– 15.3	21.6–*23.1*–25.9
SnI-	3.6– *5.8*– 7.5	4.6– *6.8*– 9.2
HAI-	40.5– *46.6*– 54.5	66.4–*73.1*–76.7
LLI–	5.8– *8.0*– 8.8	3.0– *3.5*– 5.3
CLI-	14.8– *20.9*– 25.0	42.9–*46.8*–52.1
PLI-	27.1– *33.0*– 47.4	8.0–*11.3*–18.6
SpLI-	131.3–*143.1*–157.5	—
SpWI-	2.1– *2.2*– 2.2	—
SpRI-	29.9– *30.6*– 31.7	—

The funnel is sturdy, tapering along its entire length, free for the distal ⅓. The funnel organ is generally poorly preserved, W-shaped in the holotype.

The arms are long (ALI = 69.6–*73.8*–78.3) (MAI = 24.4–*31.3*–38.3), stout (AWI = 10.7–*14.8*–21.6), becoming rather abruptly attenuated near the tips. The arms are slightly gelatinous. The arm formula is variable, generally I.II.III = IV. or I = II.III. = IV. The biserial suckers are somewhat flattened and variable in size (SnI = 4.6–*6.8*–9.2). There are approximately 60–65 pairs of suckers per arm. No enlarged suckers are present.

The web is fairly shallow (WDI = 21.6–*23.1*–25.9); it extends down the dorsal sides of the arms for approximately ½ of their length and down the ventral sides almost to the tips.

The right third arm is hectocotylized. It is sub-equal or slightly shorter in length than its fellow (HAI = 66.4–*73.1*–76.7) and bears a narrow, but distinct spermatophoral groove along its entire length. The ligula is small (LLI = 3.0–*3.5*–5.3), pointed, with a shallow central depression. No transverse rugae were observed. The calamus is small, but because of the short ligula, has a high index (CLI = 42.9–*46.8*–52.1).

The digestive system was dissected out. The buccal mass is large in relation to the size of the animal. The beaks, shown in Figs. 2B,C, are not particularly distinctive. The radula displays variation in the cusp symmetry of the rachidian tooth. In one paratype, the rachidian tooth is of the A_4 type. A second paratype showed a slight asymmetry in cusp arrangement. The first laterals have a sharply pointed, tall ectocone; the second laterals have a triangular endocone set on a broad base; the third laterals are saber-shaped with sharp points; the marginals are greatly reduced, plate-like, and rectangular. The anterior salivary glands are small and adhere to the posterior portion of the buccal mass near the point of entry of the esophagus. The large posterior salivary glands are triangular and lie against the crop. Midway along the esophagus is the enlarged crop which bears a prominent, anterior diverticulum. Past the crop, the esophagus enters the stomach. The stomach and spiral caecum are approximately equal in size. Two ducts enter the caecum from the digestive gland, a large rectangular organ superficially divided for one half of its length by a shallow median groove. The intestine is short and simple. There are no anal flaps.

There is no ink sac.

Neither female paratype was fully mature. The genitalia of the larger specimen

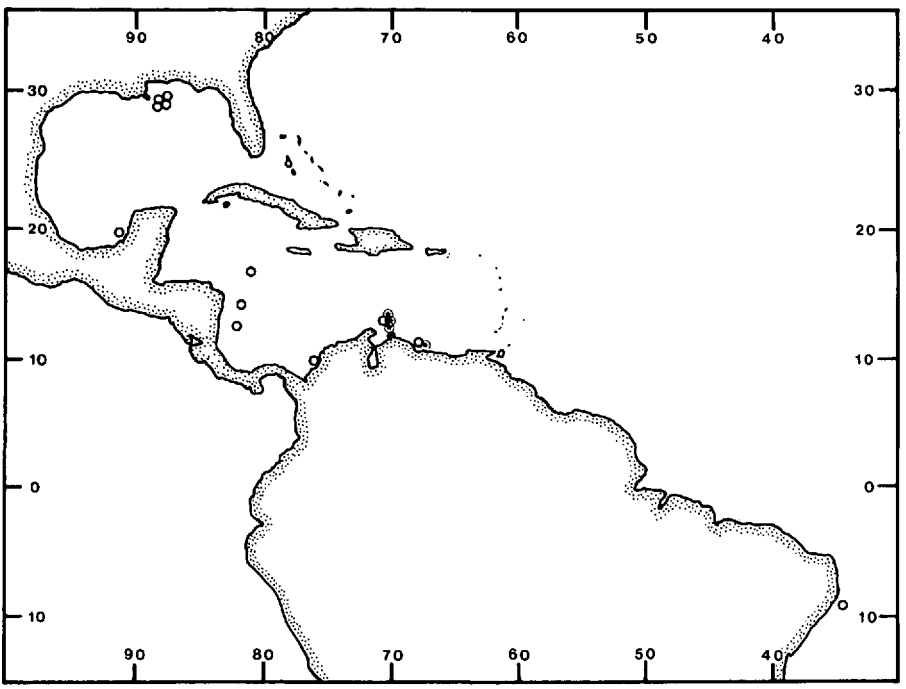

Figure 4. Geographical distribution of *Benthoctopus oregonae* new species (star in circle) and *B. januarii* (double circle). Localities for *B. januarii* from all sources cited in this study.

was dissected out for examination. The proximal oviduct is short and narrow, increasing in diameter slightly at the point of connection with the oviducal gland. The oviducal gland is not pigmented. The distal oviducts are longer, but not substantially wider than the proximal ducts. The ovary is thin walled and partially fluid-filled. Within it is a cluster of minute, immature ova.

The penis is small (PLI = 8.0–*11.3*–18.6), the diverticulum providing for approximately one half of the length. Needham's sac is approximately four times the length of the penial apparatus. The accessory gland is large and well developed. A small horn-shaped appendix is located proximal to the point of entry of the seminal gland. Proximally, the seminal duct is long and narrow for a short distance, becoming inflated medially. A triangular swelling of the seminal gland is located proximal to the entrance of the sperm duct.

Only one of the male specimens was sexually mature (USNM 730018). Two spermatophores were found in Needham's sac. The sperm mass and cement body of both spermatophores were ruptured, therefore, only the cap thread, cap, and part of the ejaculatory apparatus were available for examination. The poor condition prevents description. No measurements are given.

The mantle is smooth and devoid of sculpture. In preservation, the animal displays reverse countershading, the dorsal surface grayish-brown, the ventral surface chocolate brown.

Type.—USNM.

Type Locality.—Off Caracas, Venezuela, in 1080 m.

Discussion.—A literature review of the 16 nominal species of *Benthoctopus* was conducted to determine the status of the new species. *B. thielei* Robson, 1932,

B. magellanicus Robson, 1930, *B. ergasticus* (P. and H. Fischer, 1892), *B. pseudonymus* (Grimpe, 1922), *B. januarii* (Hoyle, 1885), *B. piscatorum* (Verrill, 1879), and *B. fuscus* Taki, 1964, can be separated by their possession of a bipartite funnel organ. The remaining species, *B. levis* (Hoyle, 1885), *B. eureka* (Robson, 1929), *B. berryi* Robson, 1924, *B. sibiricus* Loyning, 1930, *B. lothei* (Chun, 1914), *B. hokkaidensis* Berry, 1921, *B. abruptus* (Sasaki, 1920), and *B. violescens* Taki, 1964, either have W-shaped funnel organs or the organ is unknown (*B. levis, B. eureka, B. sibiricus, B. lothei*). *B. sibiricus* is known only from the arms and buccal mass taken from a walrus stomach and must be considered a species *dubium*. *B. abruptus* is characterized by the enormous enlargement of the suckers of the midportion of the arms in the males. *B. hokkaidensis* and *B. violescens* both have 11–13 gill lamellae in contrast with 7–9 in *B. oregonae*. *B. levis* is known only from the Indian Ocean and has much larger suckers (SnI = 12–18 versus 4.6–9.2 in *B. oregonae*) and has a deeper web (WDI = 33–43 versus 21.6–25.9). The funnel organ of *B. eureka* is unknown but otherwise it closely resembles *B. magellanicus* of which it is probably a synonym (Robson, 1932). *B. berryi* from off South Africa is known only from the holotype, a female, thus lacking the male characters, so important in octopodan systematics. However, it has a tripartite intestine as found in certain other species of *Benthoctopus* while that of *B. oregonae* is simple and the sucker index is smaller. *B. lothei*, the sole remaining species, is considered by Robson (1932) to be synonymous with *B. ergasticus* but the present location of the unique specimen (female?) is unknown.

Based on the above review, it is evident that *B. oregonae* can be distinguished from all other known species of the genus on the basis of a number of characters and merits recognition as a new species.

Etymology.—The specific name *oregonae* is derived from the name of the vessels that collected all the type material.

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